S. M. Waldburg

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CONTENTS.

PAGE.

Address by R. W. Roper Esq., delivered in Columbia S. C. before the State Agricultural Society, on the Anniversary, November, 26, 1844..... 41

The Factory System, a Visit to Lowell by T. S. K..... 49

Linseed Oil..... 54

Insects injurious to the Farmer and Gardener, by Willis Gaylord, (Continued from page 468 of Vol. IV..... 55

Antiquity of Guano as a Manure, communicated by Wm. Logan..... 63

Increased Growth of Cotton..... 63

Silk Culture, recommended by A. C. Van Epps..... 66

Artificial Manures..... 68

Accumulation of Manures, by a Practical Farmer..... 70

Experiments with Manures..... 72

Appearance of Dwellings—Whitewash..... 72

Mode of applying Lime—Rotation of Crops, by D. W. N..... 73

Cob Meal, by an Economist..... 76

Proper Method of Erecting the Chimney, for a Sugar, or Steam Mill..... 76

City of St. Louis in Missouri..... 77

Mammoth Lead Mine..... 77

Garden vs. Field Beans..... 78

Improved Cotton Gin..... 78

Gas Light..... 79

Rot in Potatoes..... 79

American Provisions in Great Britain..... 79

Meteorological Observations in Charlestou for 1844..... 80

The Subscribers to the Southern Agriculturist are reminded, that the Price of the Journal was reduced last year to all those who paid in advance; those who are still in arrears for this and former years are respectfully solicited to make their payments.

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The Southern Agriculturist.

(NEW SERIES.)

Vol. V. FOR FEBRUARY, 1845. No. 2.

ADDRESS BY R. W. ROPER, ESQ.

DELIVERED IN COLUMBIA S. C., BEFORE THE STATE AGRICULTURAL SOCIETY, ON THE ANNIVERSARY, NOVEMBER 28, 1844

Mr. President and Gentlemen:

The objects which convene us on the present occasion are of essential importance. They involve the advancement of Agriculture with all its collateral relations—Agriculture, the first of employments, the support of life, the source of health, independence and social comfort—a pursuit which awakens the solicitude of the husbandman, kindles the pride of the patriot, absorbs the policy of the statesman, and constitutes the welfare of every community: an elevated profession, whose superfluity originates commerce, connects the social bond of the human family, and is the acknowledged standard of National intelligence and civilization. I propose to review the subject in reference to the laws which govern it, as indicated by modern discoveries and associated in its success with a system of domestic manufactures, pointing out the relations in which they stand to each other and affect the true policy and prosperity of the State of South-Carolina.

The attainments of a modern age have enlightened the olden ignorant system of cultivation, and established principles which are still perfecting. No longer are precarious productions of nature relied on to supply the simplest wants of humanity, nor does the scanty culture of pastoral ages alarm with the spectre of famine. Seed is not now buried in the earth with the indolent ignorance of nomadic life, nor abandoned to vicissitudes of seasons to perfect, but Nature is carefully watched in her silent laboratory, her process detected, her monitions adopted, and rich rewards received of choicest stores. A system of careful preparation, with approved culture of land and crops is now resorted to, which renders success comparatively independent of casual vicissitudes, and the triumphs of Agriculture are attested by a proportionate increase of men and animals.

The progress of this art received its first rational impulse from the improvements of chemistry. That science discloses by analysis the elements which enter into soils and plants, their adaptation to each other, and that success depends upon restoring the fertility of soils by applying certain agents essential to reorganization.—That it

is incumbent first to establish the component parts of a soil, ascertain how to alleviate its defects, and next determine the ingredients which constitute the grain, so as in culture to restore as many essential properties as appertain to each. That the atmosphere also performs in the general process important functions by parting with its subtle gases to a renewed surface of the earth, supplying to the plant vitality, solidity, color and beauty. From this science we learn that all soils are ranked as defective, unless they contain a certain amount of calcareous matter, which enters into the formation of all grain, and that lime is a chief acting principle. This fertilizer has among the intelligent ever been known as such, but modern research elucidates its mode of action, of entering into combinations with the acids of all decayed vegetable matter, forming thereby a soluble manure. Hence in compost, its great importance as an ingredient, decomposing all matter and adapting it to the fibres of the plant. It is indispensable therefore, that soils should also contain vegetable matter, or humus, to be prepared as a pabulum for plants, or where this primary vegetable constituent does not exist naturally, that it should be supplied from various sources, particularly the residuum of cultivation, or by a resort to green crops for manure, which draw the largest portion of their substance from the carbonic acid of the atmosphere and from water, and by addition of their substance enriches the soil thereby.

These are cardinal principles which science teaches, and which the ordinary classes of farmers are slow to acquire. Their tuition has hitherto been limited to a system of imitation: they have yet to become familiar with two distinct characteristics of Agriculture, the scientific and mechanical, and that success depends upon a judicious combination of both. The first, modern research is daily developing, the last, has from time immemorial been practiced, embracing the usual routine of ploughing, listing, hoeing and ditching. These are all indispensable aids, but without restoratives, prove as pernicious to the soil as the constant exercise of the muscles of a robust frame when all nourishment is denied to the stomach.

The scope of this address does not permit me to enlarge upon particular systems of Agriculture. My purpose will be accomplished by instances of the success of a scientific system. Our country can furnish but isolated examples of its effects, for as yet no permanent plan of State survey has in all its departments been undertaken and pursued. We must look abroad for facts, for confirmation of its benefits to those densely populated countries where attention to agriculture becomes an object of national existence, where the increase of a single bushel per acre is regarded as a highly important consideration, where due estimation is placed on the economy of time, labor and expense of culture: where the action of manures whether vegetable, calcareous or mechanical, is carefully scrutinized, where annual reports are made into their mode of application, and manner of counteracting effects of drought or ex-

cessive wet, and contributing under all circumstances to increased production.

To collect and improve such facts, embracing the general advance of agriculture throughout England, Lord Spencer founded a general Agricultural Society, similar to this now engaging our care. This Society has tended to most salutary results, and given rise to the establishment of county societies, which have instructed and stimulated the Farmers, and been the means of gradually increasing the grain crop from nine to fifty one bushels the acre. Proof of these extraordinary results is afforded by the fact, that between 1801 and 1841, the population of Great Britain has increased notwithstanding emigration, from 10,300,000 to 26,800,000, and that these enlarged numbers have been sustained principally by the augumented productions of improved agriculture.

Mr. Pusey, conducter of the Journal of the Royal Agricultural Society of England, says the average produce of wheat in England is only 26 bushels per acre, and that if this quantity could be raised to 27 bushels, it would add 475,000 quarters, or increase the nation's income £1,200,000. In Scotland, where fifty years ago wheat was scarcely grown, the product in some places has averaged 51 bushels the acre. And in France, by the aid of chemistry, wheat growers have succeeded in doubling the product of their lands, and in that kingdom they annually harvest more wheat than is grown in Great Britain and the United States "La Voisier, the French chemist, cultivated 240 acres of land in La Vendee on chemical principles, to instruct the farmers, and his mode of culture was attended with so much success that his crops produced a third more than by the usual mode, and in nine years his annual produce was doubled."

These are examples from which we must receive instruction and see the necessity of promoting Agricultural science. Such an auxiliary places in the road to success, and if aided by an interchange of opinion by frequent intercourse among Farmers, by Societies, Exhibitions, Premiums, Periodicals, and Newspapers, collecting, analyzing, and disseminating every fact, speculation or improvement, we may then exult in the advance of the all important cause of Agriculture.

But one exclusive pursuit can alone never secure national greatness. Agriculture must be stimulated by emolument, and emolument must proceed from diversified industry, which ample provision, by aid of skilful culture, can alone afford time and means to indulge. The exchange of such industry gives life and activity to enterprise, and an unembarrassed market becomes the desideratum of a business population. By a perversion of sentiment and sound policy, interests which derive their existence from agriculture have been too often made to present antagonist positions thereto, and disturb the political and social relations of society. In consolidated governments, one calling is frequently rendered tributary to others, and whole sections of country compelled to endure privations and impositions, under plea of effecting results, which the sanguine or interested maintain

will ultimately tend to the prosperity of a whole community, but which if a free and matured reciprocal course of trade was awaited, a more permanent foundation of prosperity would be laid, and result in mutual and protracted advantage. Unhappily, we pine under such a selfish governmental policy, which will compel to a course of conduct adverse to our wishes, foreign to our practice, calculated to establish selfish limited relationships, leading either to defensive, economical practices, or to an enlarged diversified system of labor, which ultimately will mar the prosperity of those whose short-sightedness and cupidity may drive us to an unsought ravalry, Intimately connected with our future agricultural advancement is the necessity of examining the position we may be forced to occupy, to avert mercenary fanatical combinations, and arrest the downward tendency which depresses this State. We will proceed to trace the sequel.

Husbandry, up to a comparatively recent period, has in the United States been ever conducted on principles of reckless extravagance, attesting the thoughtlessness of human character. Where abundance prevails, inconsiderate waste is a usual concomitant, The cramped and impoverished European beheld in the New World the existence of boundless forests and illimitable space, which the skies alone seemed capable of encircling, and he became excited to eager curiosity, and greedy cupidity. The woodman's axe and ploughman's furrow soon lacerated the primitive surface, and vast territories resounded to the crash of stately trees, the growth of centuries and the pride of nature. Affrighted herds, hitherto almost unconscious of the tread of man, fled from the beams of refulgent day, and sought in deeper recesses a more secure retreat—section after section became speedily occupied and deserted, while no pang of remorse smote the heart of the desolating wanderer. Abandoning his humble log hut, scarce discerned among belted leafless trees, where no effort of industry or taste kindled one pleasing reflection of the past, or conjecture for the future, with indifference he collects a few moveables, and commences another wandering march to perpetrate new enormities on some other blooming virgin soil. Thus has our country been literally laid waste by the insatiate occupancy of land, till hordes of a border population are now opening a prospect upon the broad Pacific. That mighty confine will roll back the tide of population to its first springs.—Already the early swell of a recoil is being felt and will continue. I hail the investigations of agricultural science as one evidence of its influence—and behold another furnished by the migrating population of Pennsylvania, and the Eastern States now concentrating on Virginia, occupying deserted habitations and improving abandoned fields which presented melancholy chasms to the way-worn traveller.

Strong and natural inducements will constantly be at work to promote this reaction. In a country like the United States, where wealth and consequeuce are open to every aspirant, and become the reward of genius, where an extensive and fair arena is free to

all the world, the facilities offered by the older States must stand pre-eminent. There the advantages of a liberal education may be obtained. Society with its refinements weaves a light but tenaceous web, luxury presents its allurements, and an enlarged sphere of action is afforded by the demands of civilzation, to new and countless sources of industry. The tie of old habits and feelings, broken only by the relentless gripe of poverty, become again united with better fortunes, and rising elastic from the conflict, the emigrant would once more participate in the triumphs of success.

The influence of these considerations is beginning to be of frequent occurrence, and our State would exhibit sound policy in bringing back her wanderrers, and rendering home so dear as to banish every inducement to escape from a father land. To accomplish this, it is highly important to scrutinise our habits, feelings and resources, and divested of self-sufficiency, and absurd ignorant pride, have the independence and sober sense to ascertain our deficiencies, and by comparing our wants and prospects with those of other States, ascertain our relative position in the body politic, and mark out and pursue a future line of policy.

The early agriculture of South-Carolina was principally confined to domestic supply. Her first articles of export were lumber, tar, turpentine and peltry. Indigo, rice and cotton, were afterwards introduced, became staple commodities, and yielded large sources of wealth. Indigo has been superceded by a better foreign article. Rice from favorable circumstances will probably remain a permanent culture. And cotton, once our wealth and pride, can continue so no longer: a fairer bloom opens on other lands, and every day imparts a more ominous warning that the sceptre has departed. An investigation into these facts will lead me into the salutary but unseductive records of statistics.

The wide extent of new country opened to the culture of cotton, must force us to yield the palm to more youthful competitors. The three Gulph States, Louisianna, Mississippi, and Alabama, with Georgia, produce 626,188,164 lbs., equaling 7-10 of the demands of the world. The product of South-Carolina is but 60,590,861 lbs. or 2-5ths less, than as compared with Louisiana, 1-3d less with Mississippi, 1 half less with Alabama, and nearly 1-3d less with Georgia. Florida, scarcely wrenched from the grasp of the Indian, grows 12,000,533 lbs., only 1-5th less than South-Carolina. And Texas, an embryo empire, with her swords newly wrought into plough-shares, is daily furnishing fresh laborers to the harvest, and adding new millions to the accumulating stock. This country contains 318,000 square miles, or 203,520,000 acres of land, while the six principal cotton growing States, which have been mentioned with the addition of Arkansas, contain but 301,000 square miles, or 192,640,000 acres. Climate and soil adapt a large portion of this region to cotton, and the agency now employed in unprofitable lands farther east, will undoubtedly be transferred to Texas. In the migration we must expect to contribute our quota, and suffer the double effects

of a loss of population, and a loss of their relative products, besides so much capital. The Merchant's Magazine of January, 1844, (published in New-York,) presents the following facts: That the increase of production of cotton in the United States for the last twenty years, has been 7 per cent., but that farther increase could not be attained without a diversion of labor from other pursuits. That the average of the last three years will give about 3 per cent., which may be assumed as the probable growth of cotton for a series of years to come—unless Texas be united to this confederacy, when the labor removed from less productive cotton sections will be concentrated in Texas, and come in disastrous competition with our interests in the South. If then the cotton grown in Texas and other States exclusive of that of foreign countries be added to the general aggregate, a darker cloud must envelope the prospects of South-Carolina.

Sanguine minds have looked forward to the opening of the China market as likely to create a greater demand for cotton, and supposed that while it extended the culture, the price would necessarily be maintained. The supply of three hundred and sixty millions of people will doubtless exercise an important influence upon consumption, computed as far as 900,000 bags, but the extent of arable land in the new States, in Texas and in Florida, already computed will supply any demand that may be required, and preclude permanent dependance from so remote a customer. Machinery and cheap moving power, competing with manual labor in Asia, will tend to produce a demand for manufactured articles for that country rather than a raw material, and the anticipated new trade may exert a greater stimulus on that source of industry at home, without materially increasing foreign exportation, or adding to the production of the staple. But under any event, the advantages according to present appearances, unless our practice is changed, must accrue elsewhere, and furnish additional motives on our part for vigilance and research.

The important inquiry results, what shall be this change? What is our policy? We cannot compete in cotton, shall we increase the culture of our cereal or esculent grains? An examination may illustrate the question. There is now produced in South-Carolina, 18,819,936 bushels of grain, exclusive of 1,486,208 bushels of oats, and 2,689,313 bushels of potatoes. Allowing ten bushels of this eighteen and a half millions of grain to each inhabitant, in a total population of 594,398, the consumption would be near six millions of bushels, leaving a surplus of twelve and a half millions for stock and exportation. But our exportation is limited to Rice only, and deducting 400,000 bushels for home consumption, and leaving 2,680,000 for exportation, there would be still a surplus of 10,139,936 bushels grain, besides the oat and potato crop available for 130,000 horses, and 272,608 head of neat cattle. But this redundancy, with the addition of the oat crop, forming a total of 11,626, 144 bushels, besides appropriating a part of the potato crop, will be still insuffi-

cient, allowing to the horses six quarts of grain per day, which would absorb 8,899,585 bushels per annum, leaving only 2,726,559 bushels for stock, exclusive of the subsistence of various domestic animals.

To reduce this grain consumption, we have only the precarious supply of pasturage to depend upon. Hay, the most valuable product of the Union, is almost entirely neglected by us, there being but 24,658 tons produced in the State. In a country like ours, profuse in native grasses, and some of them of most rank luxuriance, we apathetically behold their decay, without deigning to gather the rich store with which Providence carpets our fields, though our necessities force us afterwards to become purchasers of the very article so criminally disregarded. This source of supply therefore, slightly diminishes the demand on the grain crop, which is thus demonstrated as insufficient for a general supply of the whole State. Accumulations of corn notwithstanding do take place at particular locations, where abundant crops are made, for want of means of transportation, and this circumstance may hereafter furnish the speculative with new sources of investment, to open such store to public use. These facts prove we have no surplus grain for exportation, and may establish how an enlarged product for domestic consumption might benefit the State. That there would be no advantage in increasing the product for exportation, as far as a demand within the limits of the United States might require, the following statement may illustrate.

The aggregate of bread stuffs raised within the United States in 1840 was 556,326,744 bushels, exclusive of 102,000,000 bushels of potatoes. Of this amount of grain, 11,500,000 were supposed to be manufactured and exported, leaving 545,826,744 bushels to be divided among seventeen millions of people. Allowing the same ratio of ten bushels to each individual, a redundancy of 275 millions, would be still left in the granaries of the country. We therefore, could not expect by cultivating more grain, to find a market in the United States. And the following statistics prove a European market would be equally hopeless

By a report made to Parliament in 1841, containing the weekly price current of grain at the principal corn marts of Europe and Asia, for seven years, ending with 1840, the price of wheat at Odessa, was 62 cts. per bushel; at Warsaw, 68 cts.; at Dantzic, 88 cts; and at Hamburgh, 98 cts., averaging 77 cts. per bushel. And in Boston, New-York, Philadelphia, and Baltimore, during the same period, the average price was $1 40 per bushel. Adding cost of freight, this would establish a failure in a foreign shipment. Mr. Dayton, of Ohio, in his speech in April, on the Tariff, maintained that if the duty of 25 per cent. on foreign wheat was withdrawn, it could be introduced into this country, and sold much lower than domestic wheat. And by a comparison between prices of wheat at Odessa and New-York, in various years, he demonstrated that the New-York price, was uniformly more than twice as high as that

in the Mediterranean, and North of Europe, and that thousands of millions of bushels had been imported at particular periods, notwithstanding the duty.

Great Britain, in consequence of her overflowing population and limited territory, is always looked to as a large consumer, but she is now supplying her deficiencies by improving her agricultural system. Corps of scientific men are now constantly engaged in agricultural surveys, and their investigations have proved so salutary that the system is adopted as essential to the existence of the country. Already in favored sections the soil has been made to yield 82 bushels of wheat per acre, and unreclaimed waste lands are now being brought into cultivation. For the last seven years the annual importation of wheat into England, has been about fourteen millions of bushels, Flour included, but this amount is in a fair way of being reduced. The United States supplies but 720,000 bushels of this demand. Independent of this, she supplies 769,000 bushels of Paddy, and 16,000 barrels of Rice, a large portion of which is re-exported to Germany. Cheaper and more contiguous granaries in the North of Europe, pour forth their abundance to feed this population, leaving the commercial enterprise of our people to seek other outlets for their superabundant products. South-Carolina therefore, can scarcely expect to advance her welfare, by cultivating cereal grain crops, for foreign exportation.

Are our sister States more favored than we are; or have not the most sagacious set us an example, by directing their industry to more varied pursuits? Under developments which have been made, the provident have sought to better their condition by fabricating what they could not afford to buy; or parting with a redundancy to necessitous neighbors, have promoted an interchange of commodities equivalent in its effects to a barter trade. The Western Farmer makes available the grain and herbage of his prolific fields, by raising immense herds of stock, which supply to less favored States, animals for labor, pleasure or for food, while with the proceeds of his hemp and tobacco, he buys sugar, coffee, and other luxuries, of more sunny climes. The South, yields her cotton, which is transported to Northern regions, whose rushing cataracts are stayed by art to weave the delicate fibre, and the ample fleece shorn from countless flocks, that crop the verdure of a thousand hills, is there too fashioned to shield from wintry blast. The teemful North testing every source of profit, sends forth her thousand manufacturers, tempting the fancy and palling the energy of supine neighbors, whose streams of wealth flow from them fatally, as the life blood from the victim under the enervating influence of the tepid bath. The capitalist, craftily availing himself of this direction of trade, and aware of the value of the home market, has secured a monopoly, under patronage of government, and revealed a conspiracy against us, presenting a changed issue to the whole subject. South-Carolina awakens, conscious of the fact that she has languished too indulgently in a fatal system of dependence, and must now escape from a faithless

venal embrace. Pride, character and safety, are involved in effecting a release, and to show the necessity, I will but glance at our sacrifices.

The cotton crop of South-Carolina is estimated at 61,710,274 lbs. valued at six millions of dollars. The Rice crop at 80,000,000 lbs. worth two millions, making an amount of eight millions of dollars, the exported agricultural product of the State, lumber, tobacco and some few articles may swell the total to half a million more.

Against this aggregate of eight and a half millions, we have to bring an importation of $8,640,000, independent of amounts distributed through Georgia, Alabama, Tennessee and North-Carolina. Among the items of expense are $260,000 for Flour, $150,000 for Corn, $128,000 for Oats, Peas and Hay, $585,000 for Bacon, Lard and Butter, $1,775,000 for Mules, Horses and Hogs, $1,081,709 for Shoes—Dry Goods considerably exceed a million, besides large sums for Northern Hardware, Machinery, Building Materials, Lime, Granite, Carpentry, Equipages, Furniture, Hats, Beef, Pork, Fish, Baskets, Pails, Brooms, and a thousand other articles, too tedious to enumerate; near a million is also expended by travellers and absentees. This summary establishes that we expend more than we make, and consequently the State languishes under an incubus, which will require a strong moral force, independent of activity and industry, to remove. And in advancing these facts, far be the imputation that I would derogate from the merits of those who are reaping the just rewards of industry, enterprise, and economy, human nature is tempted to envy, but a gallant spirit will be evinced by emulating such virtues and success.

[To be concluded in our next.]

THE FACTORY SYSTEM.

We invite all those who are politically or otherwise unfriendly to the factory system, to read the following interesting article, from the Louisville Journal.—*Ed.*

A Visit to Lowell.—Early one bright sunshiny morning in July last, we sallied out from the Tremont House into the crooked streets of Boston, aud inquiring our way as we passed along, of the shop boys, who were brushing down and sweeping out the stores previous to the bustle and business of the day, we soon found ourselves at the Lowell Railroad Depot, and in the midst of a crowd of market women, factory girls, and artisans, all waiting for the starting of the cars. Some were seated in the cars, others were standing alongside of a counter, upon which was spread a *dejeuner a la finger*. On one end of the counter was a huge bright coffee-pot, from which the aromatic steam puffed and hissed like a small locomotive. The largest crowd, however, was around the ticket office. These last

we joined, and by paying one dollar we received a little blue card, which permitted us to have passage to Lowell, and took our seats in a car, with nineteen young women and one man in horn spectacles. We soon started, and in an hour reached the city of Lowell, situated on Merrimack river, twenty-five miles from Boston.

We walked to the corner of the square and looked around. All was still and silent; the streets looked deserted, for not a soul was then to be seen. We looked up and down the main street; the houses were all built of fine brick—the street was beautifully graded and paved, every thing looked as bright as a new pin, and as though the whole town, houses, streets, canal, and all, had been built by contract, and was just completed! The canal or acqueduct of solid masonry ran across the main street at right angles—and on each side of it were rows of beautiful shade trees, forming avenues most delightful for promenading. The houses were tastefully built, neat, commodious, and comfortable. The cleanly and neat appearance of the streets, the houses, the pavements, and everything around was so remarkable, that I involuntarily brushed the dust off my clothes, and smoothed my hat as we walked along. There were no loungers sitting at the doors or about the hotel, no idlers in the streets, no dirty children playing on the pavement, no beggars craving your charity.

The very few persons that were occasionally seen at all, hurried to and fro, as if their time was precious. We walked on a square down the canal, and saw before us dozens of immense new brick palaces, as they may be truly called, towering six or seven stories high, the walls absolutely full of windows. We entered a gateway within a large enclosure of many acres. The grounds were laid out with the same neatness as was exhibited throughout the whole town, and in white gravel walks, grass plats, and beds of flowers. Within the high brick wall enclosing these grounds, rose five mammoth mills, all detached from each other, and many smaller buildings occupied as offices for the print works, &c. Presenting our card for admission from Messrs. A. & A. Lawrence, & Co., of Boston, at the agent's office, we were shown all through the buildings. Entering one mill, we passed on up from story to story, and saw the whole process of manufacturing, in the different stages, from beginning to end—from cotton in bales to fine fabrics, ready for printing.

Throughout the whole establishment everything was neat, sweet, and clean. The floors were scrubbed as bright and stainless as the decks of a man-of-war, the machinery was bright and highly polished, and the most perfect order, system, and regularity were everywhere exhibited. In the windows bloomed the jessamine, the geranium, the cactus, and the lily, and in the passages were hung up a whole legion of bonnets and shaws in systematic array. On each floor was a dressing-room, where the girls had a wholesale supply of water, brushes and looking-glasses. As we passed through the building, from floor to floor, everybody was busy at work. Ten thousand spindles whirled with unceasing motion, and the sharp,

quick, claptrap of a thousand looms was as deafening as the deep voice of the hurricane on the sea-shore.

A thousand girls, and more, were busily engaged around us—fair and beautiful maidens from sixteen to eighteen or twenty years of age. Their straight, well-turned figures, tall and graceful, showed that they had just expanded into womanhood. The blush of modesty tinged their downy cheeks, their expressive eyes beamed with intelligence, and around their ruby lips played sweet smiles, so saucy and so tempting, that my heart swelled and thumped like a pheasant drumming on a log.

The intelligent gentleman that conducted us through the mills told us that all the factory girls were boarded by the corporations; and that the strictest watchfulness was kept over them. There was an elevated tone of morality and virtuous feeling existing amongst them unequalled in any community of the same population. The majority of them were from the neighboring States; the average distance which they had come was seventy miles. After remaining three or four years at Lowell, they generally returned home to their families, possessed with a small fortune, saved from their wages, to bestow as a dowery on some worthy young man, seeking a wife.

The average wages of the females in the mills, clear of board, amount from $1 75 to $2 per week, and of males to 70 cents per day —as they are paid by the peace, they can make more or less, as they please.

At 12 o'clock, M., the factory bells chimed merrily, and the whirl of the spindles, the clatter of the looms, and the hum of the drums and wheels, all ceased. The gates flew wide open and out poured a dense and living stream of girls, all with shawls and deep sun bonnets—from beneath which soft eyes beamed and heart-thrilling glances were thrown. On—and on—and on they came, and filled with one long and almost interminable line, the streets that a few moments before were so lifeless and deserted. And yet they came, from the mills above, and the mills below, and the mills all around, till twenty thousand souls had ceased their labors and gone abroad together, forming for miles and miles one continuous line! It was a strange and deeply interesting sight. These females, with the fresh and rosy hues of health, and the bloom of youth upon their cheeks, would have formed a galaxy of beauty, by the side of whom the sickly-looking, pale-faced, cotton-stuffed, ball-room bells of other cities would seem like so many Egyptian mummies! For almost an hour they continued to pour out, till really they had all dispersed and the streets were once more empty.

We walked up the street and in each house we could see fifteen or twenty at a table, gaily chatting whilst at dinner. The savory smell of meats and viands, that greeted our olfactories as we passed along, whetted our own appetites and made our mouths water. These boarding houses were situated in rows, each one painted white and embowered in shade trees, with a little garden and neat white pailings in front. They looked like the abode of cheerful

comfort and happy contentment; each house was under the management of a tidy housewife, and all of them under the immediate and direct supervision of the agents of the corporations.

Having partaken of an excellent dinner at the Merrimack House, we returned again to the factories.

We next visited the printing establishments, where the bright, white fabric, is by a rapid process converted into the most brilliant and beautiful calico prints. The process was very interesting; each color is printed separately by an engraved copper roller, and after passing over four, five, or six rollers, according to the number of colors, the pattern or figures are completed. At one establishment they have thirty-odd engravers constantly employed, in making new patterns and engraving new rollers. After the cloths are printed, they are dried by running them over warm rollers and through a heated room. Then the colors are set and "warranted fast," and finally the calicoes are glazed, folded, labelled, and are ready for sale. The whole operation from beginning to end, is extremely interesting; and the rapidity and the perfect accuracy with which the fabrics are printed by the rollers, show an incalculable improvement on the old process of printing by hand with wooden blocks.

At the carpet factory, we saw them manufacturing carpets by power loom—the machinery is a most complicated and ingenious invention of a gentleman of Lowell. This is the only establishment in the world where carpets are manufactured and woven by machinery, the invention being so recent that it is still regarded as an experiment. No doubt, however, can be entertained of its entire and perfect success, and in a few years hence, when the use of the power loom becomes general, we will be able to carpet every house in the United States and England, at one-half the price that it has heretofore cost! The extraordinary working of this almost intelligent machinery surpassed all complicated complications I ever beheld. The "*modus operandi*" surpassed my comprehension; but there were the carpets rapidly growing in the looms; carpets of two ply or three ply, ingrain and Brussels, all of the most brilliant dyes, the most beautiful patterns and the most fashionable styles. The rug department too was full of interest and wonder, and among various kinds of rugs, we noticed one, which for beauty of design, brilliancy of color, and fineness of texture, was far superior to any ever imported from Europe. We were told, that although this carpet mill had ninety looms in operation and employed more than six hundred hands, they could not supply the demand for carpets, which they manufactured and sold cheaper than the foreign carpets could be imported.

The next establishment we visited, was an immense woolen mill, where broadcloths and cassimeres were manufactured. The process of washing, dyeing, and spinning the wool, weaving and dressing the cloth—then pressing, finishing and folding it, was on a scale so extensive, that one can form no correct impression of it without

really seeing and beholding for himself. The number of hands employed in this mill is between eight and nine hundred. There are 159 looms in constant operation and the cash capital of the corporation is $950,000. We saw an immense stock of fancy cassimeres on hand, which for elasticity, fineness, strength, and firmness of body, were equal to the very best French cassimeres we ever saw. In fact, one merchant in ten would have taken them for such and never known the difference. The styles were also new and tasteful, and we were informed that the stock would not be offered for sale before this fall, when a sufficient supply will have accumulated to meet the demand.

In the broadcloth department we were shown an article of black cloth for $8 per yard, that compared advantageously with the French cloth we were wearing, which had cost fifty per cent. more. We felt truly ashamed of ourselves for wearing a foreign cloth, when just as good American cloth could have been bought, and that too for much less money.

No one, indeed, can visit Lowell, and go through these immense mills, and see the industry and prosperity every where around, and reflect upon the beneficial results to the whole country that are derived therefrom, without feeling proud of his country, its growing wealth, its increasing prosperity, and its liberal institutions, fostering American enterprise and protecting American industry.

The locks and canals machine shop, where five hundred men are employed, was most woderful. It was an immense building, and had works sufficient to make all the machinery complete for a mill of 5,000 spindles in four months. We saw them here planing, turning, and polishing the solid iron, as though it were so much wood. The foundery or smithy attached to this shop was on an extensive scale.

The reed machine is a curious invention. The wire and wooden slits, and tarred twine, are separately prepared by machinery. Then they are put in a machine together, and the reeds come out completely finished at the rate of a foot a minute. In this process the steel dents of the reed are cut, placed between the slits, and the twine wrapped around twice and tied on each side—all by machinery, and as quick as thought. It is an operation so ingenious, and yet so simple, that I wondered if there was any thing that human genius and Yankee invention could not accomplish.

The card machine is another ingenious contrivance, where machinery is made to work like the human hand, and to think like the human mind.

But it would take volumes to describe all the wonders and interesting sights at Lowell. Besides mills for manufacturing sheetings, shirtings, drillings, calicoes, flannels, broadcloths, cassimeres, blankets, carpets, rugs, negro cloths, lenseys, jeans, osnaburgs, machinery, &c., all on the most extensive scale, there is a waterproofing establishment, and there are also powder mills, batting mills, paper mills, card factories, whip factories, planing machines,

reed machines, bleacheries, grist mills, saw mills, and various other kinds of manufacturing establishments, all in the most prosperous and flourishing condition.

In the canal, the water-fall is 32 feet, and the water, after being used by one mill, passes on and is used over and over again by other mills, until its very power is spent, when it returns again to the bosom of the Merrimack, that silently and smoothly flows by the town, enjoying, as it were, the noise and bustle it has been the means of creating.

The city of Lowell has a population of 25 to 28 thousand, and is scattered over an area of about one mile square. It contains many handsome churches, hotels, shops of all kinds, schools, &c. Several newspapers are published there, and the "Lowell Offering," a magazine edited by the factory girls, has a reputation extending all over the Union. There is no town in the world that surpasses it in neatness and cleanliness of appearance; and the morality and industry of the entire population are unequalled in any community of the same size.

There are eleven principal manufacturing corporations in the place, with an aggregate capital of $10,650,000, and which have in operation 201,076 spindles, and 6,194 looms. These eleven corporations consume annually 58,240 bales of cotton, manufacture 74,-141,600 yards cloth, employ about 9,000 hands, and have 33 large six and seven storied mills, besides many other extensive buildings. One of these corporations alone has a capital of two millions of dollars, and besides having 40,384 spindles and 1,300 looms in operation, it employs constantly 1,250 females and 550 males.

The mills or factories look bright and new, (all of them having been built since 1822,) and are not only full of windows, to afford a free ventilation through the different apartments, but are also furnished with every safeguard against fire. On every side of each building are ladders extending from the roof to the ground, so that in case of fire these immense bee-hives can discharge their swarms of living creatures in a few moments without the least danger of accident.

With regard to the health of the persons employed in the mills, "six of the females out of ten enjoy better health than before entering the mills; and of the males one-half derive the same advantage."

One could spend weeks and weeks in Lowell, and yet see something new, ingenious or wonderful every day. It is one of the most interesting cities to visit in the United States, if not indeed in the world.

T. S. K.

LINSEED OIL.

The Cincinnati Gazette states that there are five linseed oil mills in that city, and another one in the course ot erection. They are capable of making, in the aggregate, 900 gallons of oil per day. The manufacture of linseed oil for export is a new business in the West. It is only a few years since it was obtained from the East for western consumption.

[*American Agriculturist.*

From the Transactions of the N. Y. State Agricul. Society.

INSECTS INJURIOUS TO THE FARMER AND GARDENER.

A SERIES OF ESSAYS, BY WILLIS GAYLORD.

(Continued from page 468, of Vol. IV.)

SECTION III. *Insects injurious to Orchards and Fruit Trees, generally.*

There are few parts of a farm that contribute more to the general aggregate of profits, certainly none that add more to the comfort of the husbandman, than the one devoted to the culture of fruit; and as all trees are more or less liable to attacks from insect enemies, the fruit grower has need of constant vigilance to preserve his trees and fruits from these assailants. In noticing some of the most injurious of these, the first place will belong to those infesting apple orchards.

One of the most common of the insects that attack the apple tree is the caterpillar, *Clisiocampa Americana* of Harris, Tent caterpillar or Lackey caterpillar of foreign writers, so called from the web it weaves for protection while not feeding. This caterpillar, well known as one of the worst enemies of the orchard, is unfortunately so common as to need no description. Within a few years they seem to have multiplied to an alarming extent; having the last summer entirely stripped of their foliage, and of course destroyed the fruit, of thousands of orchards; and there is every probability that their numbers will multiply so long as they are permitted, as they were in many places last year, to proceed in their transformations and work of destruction unmolested. Scarcely anything is easier than to destroy them when taken at the proper time, and before they wander to any considerable distance from their webs or nests; and a stimultaneous effort of the farmers of any neighborhood or town for their demolition, would effectually abate the nuisance perhaps for years. Lye, whitewash, poles with brushes or cobs attached, whale-oil, soap-suds, burn off the webs with gunpowder, and we know not how many other modes of destroying them, have been recommended, but the method most effectual we have never seen noticed. It is this: when the worms are all hatched from their eggs, and the webs become so conspicious that they cannot well be overlooked, with a suitable ladder and a pair of stout mittens, if you are fastidious about using your hands, commence the attack in earnest. Select the time when the worms are all in their web, and then at a single grasp, that and every occupant may be at once destroyed. We last year knew a farmer whose orchard was loaded with the young caterpillar's webs in the spring, who freed it wholly from them in this way, and its green foliage and heavy fruitage formed a striking contrast to those orchards whose owners made no efforts to save them. When the caterpillar is ready for its transformation, it passes a few weeks in the pupa state, and then comes forth a moth or miller, which deposites its eggs in a comb of a thimble-like form, around and near the extremity of some branches. The warmth of the next spring that develops the young leaves, hatches these eggs;

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and the young caterpillars, selecting a favorable spot on the branch, proceed to spin their web, feeding at the same time on the opening leaves and blossoms.

Next to the caterpillar in destructiveness, and where it is fully established, perhaps still more injurious to the orchard, is what is called the canker worm, the progeny of the *Phalæna vernata* of American entomologists, the *Geometra brumata* of European ones. In this country the ravages of the canker worm are limited mostly to the Atlantic States, and chiefly to New-England, while those of the caterpillar extend wherever the apple tree is found. The canker worm belongs to the kind known by the different names of inch worm, loaper caterpillar, surveyor, &c., from their mode of progress. There is a wide difference between the male and female of the parent moths; the former having wings, while the latter is only provided with their rudiments. The general time for the deposition of their eggs is in March, but in mild winters they have been observed in every month busy in this work; in fact, in favorable seasons, eggs are deposited in every month from October till April. The insects, when they escape from the earth, make for the nearest fruit trees, the male by flying and the female by crawling up the body. In this progress the pairing of the moths usually takes place, and the female assending to the top of the tree, glues her eggs upon the fruit buds and smaller branches, singly or in clusters. Rain cannot wash them off, nor cold destroy their vitality. The warmth that opens the buds brings the canker worm from the egg, at first almost transparent and but little larger than a horse hair; they feed on the delicate young leaves, but soon take the blossoms and the young buds, their appetite appearing to increase with their size. When the fruit begins to form, it becomes their favorite food; and when this is devoured the foliage is again attacked; and where they are numerous, the small webs they make to protect themselves, added to the destruction of the foliage, gives the tree the appearance of having been scorched. They leave off eating when about four weeks old, and following the directions of instinct, begin to quit the trees. They generally let themselves down by a thread spun from their mouths, while some creep down the trunks and others fall at once to the earth. When they reach the earth, they penetrate it from two to six inches, where they are transformed into chrysalids. In this state they usually remain till spring, but any considerable degree of warmth, will, as before stated, bring out the perfect insect at any previous time.

Most fortunately, as the females of this scourge of the orchard are without wings, they cannot spread rapidly, or they might wholly destroy our fruit trees. Naturally confined to a limited space, they spread mostly by accidental causes; but when once established, they are difficult to subdue and terribly destructive. To put a total stop to the ravages of the canker worm, it is only necessary to prevent the females from crawling up the tree; but this, so easy in theory, in practice is found to be very difficult. Almost every thing sticky,

greasy, offensive, or poisonous, has been tried, and with very little effect. Tar spread on the trunk of the tree or on paper, and secured about it, will check them for a time, but it will soon become dry and is then passed at once; or where the insects are numerous, the tar will soon be so covered as to permit the ascending column to pass safely. Threads or papers smeared with mercurial ointment have been found ineffectual: in short all ordinary obstacles are overcome readily.

In Kollar's work on insects, the following contrivance is pronounced the best yet discovered: Four boards, about a foot long, and rather wider than the diameter of the tree, are nailed together in the form of an open box; but the fourth side is not fastened until the box is placed around the tree. The bottom must be placed an inch or two deep in the earth, which must be trod down hard about it, to prevent the moths getting under it. On the top, a thin piece of wood three or four inches wide, is nailed, to prevent the sun or rain having effect on the tar or cart grease which is to be smeared on the outside of the box, on the under side, and in the angle formed by this coping. While the box is new, smearing must be repeated two or three days in succession; afterwards smearing is only necessary two or three times during autumn, or if the weather is cold, it may be dispensed with until spring. On the first appearance of warm weather, the boot must be again smeared, which, with occasional repetitions, will prevent their ascent. The principal recommendation of this method is, that, while it is effectual, it prevents all that damage which is apt to arise from the application of tar, grease, or oil of any kind, directly to the bark. In this country, a trough of lead containing oil is placed under this coping, and is found very effectual. A patent has been taken out by Mr. Dennis, of Portsmouth, R. I., for a circular leaden trough containing oil, to be nailed around the tree. It is found to be effectual in cutting off the assent of the moth, but the nails and the oil has been found injurious to the trees, and it has been necessary to take great pains to guard against such a result. Wedges of wood are used to support the troughs instead of nails, and instead of the stuffing of cotton or tow that is required between the trough and the tree to make it tight, and which was found to absorb and retain the oil, Dr. Harris recommends that sea-weed and fine hay be used. For a description and figures of the trough and its mode of application, see the "Albany Cultivator," vol. ix. page 165. Some hopes are entertained, that showering the trees infested by the worm, with a mixture of water and whale-oil soap, as recommended by Mr. Haggerston, will destroy the canker worm as well as other insects. Sudden jars will cause many to spin down, when they can be destroyed. If hogs are allowed to run under the trees, and the ground is rooted over repeatedly during the time the insect is in the earth, from July till October, multitudes will be killed. Fortunately for the farmer or orchardist, the canker worm has many enemies. They are devour-

ed by birds; a large ground beetle feeds upon them voraciously; an ichneumon fly deposits its eggs in the worm, from which is hatched a maggot that destroys it; and even the eggs of the canker moth are pierced by a small fly, a *Platygaster*, in which an egg is left which is hatched into a minute maggot, feeding on the contents of the moth's egg until it is full grown. These and various other means are adopted in the economy of nature to check the increase of these noxious insects. For more full accounts of this pest of the orchard, reference may be made to Kollar, Harris, and the volumes of the New England Farmer.

Another insect that does great damage to nurseries of young apple trees, and is frequently found on the bodies and branches of other trees, is a species of bark-louse, called by Geoffroy the *Coccus arborum linearis*. The two former apple-tree insects described, belong to the Lepidoptera, this to the Hemiptera class. They are shaped not unlike muscle shells, about one-tenth of an inch long, and adhere firmly to the bark by means of their sucker, which is at the upper or pointed part. On lifting one of these shells in the spring, a great number of eggs may be found under it, of a white color, resembling globules of starch. We have frequently examined them with the microscope, and very often found eggs unhatched mingled with the young in their cover. When vivified by the sun, the young soon creep from under the dead body of their parent, which has formed their protection, and selecting a place on the bark for themselves, penetrate it with their sucker, and are fixed for life. We have seen young trees so completely covered by this coccus, that scarcely a spot on the bark could be found exempt from them; and on paring off the bark, thousands of punctures, shown by the discoloration of the bark and wood, revealed the places whence the juices of the tree were extracted. The injury done to young or old trees by this insect is great, it seriously affecting both the growth and the fruit. The only effectual remedy we have ever tried for this insect is common whitewash; but Dr. Harris recommends a wash made of two parts soft soap, eight parts water, and lime enough to bring it to the consistency of good whitewash. We have not tried this, but presume it would destroy the coccus, as well as promote the growth of the tree.

There is another insect called the cottony aphis, *Aphis lanata*, sometimes found on apple trees, but in this country it is much oftener found on the black alder in swamps, and on other trees, than on the apple tree. This insect fixing itself by its sucker at the proper time, throws out from under its body masses of a white cotton-like looking material, filled with minute young, and this floating off on the wind, is attached to whatever branches it may strike; and if the wood or position is favorable, a new colony is speedily commenced. Whitewashing the trees as this insect appears, is certain to destroy them, as will rubbing them with a stiff brush, or any wash that prevents the escape of the young. In Great Britain this aphis is called the "American blight," under the

mistaken idea that it was imported from this county; but this has been shown to be an error, as several species of the *lanata*, including the apple one, have long been known to foreign entomologists.

In New England and the Middle States, the apple tree is frequently attacked by a grub, commonly called the *borer*. This is the larvæ of a beetle called by Say, the *Saperda bivittata*, and which is transformed into the perfect insect in June. In the day time it keeps secreted among the leaves of the trees it infests, and during the night is busy in search of companions or food. The eggs are deposited upon the bark of the tree, near the root, in the course of June or July, and from them is produced a round white grub, with no appearance of legs. Mr. Buckminster of the "Massachusetts Ploughman," who has paid much attention to this insect and its habits, has arrived at the following conclusions: That the beetle makes its appearance in June; that about the first of July, she makes provision for her offspring; that she lays her eggs, ten in number, on the body of the tree near the ground; that the eggs are hatched in about eight days; that the maggot only burrows in the bark the first season; that during the second season it penetrates the wood, boring upwards; that in the third year it is eight or ten inches higher than its place of entrance, and that in June of the third year, it comes out a perfect insect. It must be admitted, however, that there are some doubts about the precise time taken in its transformation, but these perhaps may be solved by future observation. The same borer also attacks the quince, thorn, mountain ash, and some of the woodland shrubs, which shows that it is widely disseminated. The mischief it occasions, too, is much aggravated by the carelessness of many farmers, who take no pains to preserve their trees or destroy these depredators. The grub is easily found by the hole made in the bark and the dust thrown from it. If only in the bark, it may be picked out with a sharp pointed knife; or in the wood, may be cut out with a sharp narrow chisel. Where the burrow is open, a flexible barbed wire will either extract or kill them. Dr. Harris suggests that if a bit of camphor was introduced into the hole, and plugged in with soft wood, it might destroy the worm. We should have more confidence in some fluid known to be fatal to the grub, and thrown into his burrow from a fine pointed syringe. We doubt whether the grub could stand for any time immersion in corrosive sublimate or the acids. Mr. Buckminster states, that "scalding water, or cold lye, strong enough to bear an egg, will kill, if it comes in contact with them." Injecting cold lye would be an easy experiment. Mr. B. and those who have adopted his plan of an annual washing of the tree in strong lye, about the time of the hatching of the eggs, have succeeded well in clearing their trees of the borer, and as the process is rational in itself, it should be adopted wherever the borer shows itself. Whitewashing, and heaping leached ashes around the root of the tree, have also proved useful; and if any neighborhood of farmers would adopt and carry out a thorough system of freeing their trees, for

only two or three years, they would find very little trouble necessary afterwards to enjoy such an exemption as would secure their trees from damage.

The insect we have now described, have been depredators on the foliage or the wood only, the canker worm excepted; but there is another most mischievous enemy to the apple, that attacks the fruit only, and where it prevails is known as the apple worm. It is a true caterpillar, not a grub, like the plum and cherry weevils; and is the larvæ of the moth called *Carpocapsa pomonella*, the codling or fruit moth. A good description of this worm, with figures, may be found at page 230 of Kollar's work on insects. In some years this apple worm has been so common in New-England, that a very large part of the apples were rendered worthless by it. It is very rare in the interior of the States, but we have occasionally met with it, and it is to be apprehended it will become still more common. The moth appears in the latter part of June, or beginning of July, and without puncturing the fruit, deposit their eggs in the hollow at the blossom end of the fruit, where the skin is most tender, and the worm the least liable to disturbance. As soon as the worm is hatched, which is in a few days, it commences eating into the young fruit, making their way from the eye towards the core, and marking its presence by the powder thrown out of the opening. The moth seems to prefer early to late apples, and the thin-skinned summer fruits suffer the most extensively. In the course of two or three weeks, the worm has burrowed to the core, and attained its full size. To get rid of the matters made in its excavations, it cuts a round hole through the side of the apple, and thus is enabled to keep its burrow clear. Sometimes the worm leaves the apple before it falls, but usually the injury it has received causes it to fall prematurely, when the worm quits it, and spins a cocoon, in which it changes to a chrysalid, and in a few days more, the perfect insect appears, to renew the work of destruction. These are only the earliest ones; the later ones do not perfect their transformations till the ensuing spring. The surest mode of destroying the apple worm, is to allow swine to run in the orchard, to gather all the fruit that first fall; or where this cannot be done, to pick them up by hand and feed them to some animal. The plum weevil and the apple worm are distinct insects. The plum weevil has been found in the apple, but the apple worm never in the plum.

For many years the pear trees of this country were subject to a disease, which, commencing in the summer with the withering and drying up of the leaves and branches on some parts of the tree, continued to spread until eventually the whole tree perished. Multitudes of fine trees thus died annually, and some feared the pear must become extinct. To the Hon. John Lowell of Massachusetts, belongs the honor of discovering the cause of this destruction. He found that a small beetle deposited an egg near the root of the bud, the worm proceeding from which, followed the course of the eye of the bud towards the centre of the branch, around the

pith of which it passes, forming a kind of burrow, and cutting off the circulation of the sap to a great extent. As this is done during the heat of summer, when the sap is most needed, the death of the branch is the result. Prof. Peck examined the character and habits of this insect, to which he gave the name of *Scolytus pyri*. His account of the insect may be found in the fourth volume of the "Massachusetts Agricultural Repository." The beetle is of dark brown color, and about one-tenth of an inch in length. The remedy suggested by Prof. Peck and Mr. Lowell, was to cut off the branch as soon as symptoms of blight were discovered, and consign it to the flames at once. It was found necessary to cut off the branch quite as low as the disease showed itself, as the insect is found at the lowest part of the withered branch; and where this system of excision is carefully carried into effect, by frequent examinations, and the branches immediately cut off and burned, little or no damage is now caused by the insect. If pear trees are now lost by this insect, or by the fire blight, as it is frequently called, it may justly be attributed either to the ignorance or the negligence of the owner.

The pear has another enemy in the pear weevil, *Curculio (anthonomous) pyri* of Kollar, which lays its eggs on the buds, causing them to turn brown, and many of them to fall off about the time of blossoming. This curculio is not common in this country, but we have seen results on the pear tree, which were to be referred to this or a similar insect.

The plum tree, both in its fruit and its wood, seems peculiarly liable to the attack of insects. The principal of these is the *Rhyuchœnus nenuphar*, or plum weevil. Plums, cherries, peaches, and stone fruit generally, are attacked by this beetle, which is of a dark brown, about one-fifth of an inch in length, with a long curved snout. They puncture the fruit with their snouts in a semicircular form, and in each puncture deposit an egg. This hatches, becomes a white grub, and feeding on the pulp and juices of the green fruit, causes it to become gummy or fall prematurely. The grub, on arriving at maturity, leaves the fruit for the earth, in which it passes into the chrysalis state, and in about three weeks appears as a perfect insect. No matter what may be the fruit attacked, the course pursued by the insect, and the result, is nearly the same. The plum more frequently falls, however, than other fruits, and hence the insect attracts more notice in that fruit than in others.

Did the beetle confine its ravages to the fruit of these trees alone, the damage would be small, compared with what it actually is; since not only the fruit, but the tree itself is frequently killed by them. Every one conversant with fruit, has observed the black unsightly masses that collect on branches of the plum tree, some varieties of the cherry tree, and, in some cases, in swellings or gummy protuberances on the peach tree. These are occasioned by the same insect as that which destroys the fruit, and the grub may usually be found in them, perhaps always, if the masses are examined at the proper time. When the beetle attacks fruit, which is usually soon

after the fruit sets on the trees, its presence is easily detected by the marks on the surface, particularly the smooth skinned ones. If a sheet, or sheets, are at this time spread under the tree, and a sudden violent jar given the tree, the beetles will fall, and, being received by the sheet, may be easily gathered and destroyed. If this operation is performed for a few days, every morning and evening, the fruit will be secured. If hogs, or even geese, are allowed to run among the fruit trees, they will eat the fallen fruit, and thus destroy the most of the worms. We had, for many years, some cherry trees standing in a lot where hogs were generally kept through the spring and summer months. The fruit on these trees rarely suffered in the least, while others, not so situated, were frequently almost worthless from the grub. Paving the ground under the plum and cherry is found to operate as a preventive, it preventing the worm from readily burying itself in the ground, and while exposed it is frequently picked up by hens, birds, &c. Kollar remarks, that the plum weevils of Europe, "in default of plums, make use of the soft spring-shoots of the plum and apricot trees;" and this seems probable is the reason why the branches are so fatally attacked here. So destructive has the black gum, or blight, become, that many farmers have abandoned attempting to grow the plum or the cherries most liable to be attacked; but there seems no good reason for this course. If the trees are carefully examined during the summer months, as often as once a week, and every branch where a swelling of the bark, or the appearance of the black excrescence is discovered, is at once cut out and burned, the trees will soon be free from the insect, and, this course pursued, will remain so. The Messrs. Thomas, of Scipio and Macedon, in Western New-York, who have had the most ample experience in the culture and management of fruit trees, find no difficulty in preserving their orchards and nurseries from these pests; and the same may be said of all who are willing to unite the intelligence and exertion requisite to success. We have found the wild or Indian plum of our forests, the *Prunus Americanus*, even when growing side by side with the diseased trees, perfectly exempt; and it is possible that it might make good stocks for engrafting or inoculating the cultivated varieties upon, as preventive of the grub. The fruit of this wild plum is exposed, however, to another enemy, a species of *cynips* or gall insect, which causes the young fruit to expand into large, irregular, puffy masses, not altogether unlike the false honey-suckle, or swamp apple, so common in New-England; and it is possible this insect would continue to operate on the inoculated or grafted fruit.

[To be continued.]

For the Southern Agriculturist.

ANTIQUITY OF GUANO AS A MANURE.

Mr. Editor,—In looking over Robertson's History of America, I found a note relating to Guano, which induced me to refer to the author he quoted. As Guano attracts so much attention at present, I have transcribed the passage, thinking it might be acceptable to some of your readers, who may not have seen the work.

WM. LOGAN,
Librarian of the Charleston Library,

"The lands in the jurisdiction of Chaucay, like the other parts of the coast of Peru, are manured with the dung of a certain sea bird, which abound here in a very extraordinary manner. These they call guanoes, and the dung guano, the Indian name for excrement in general. These birds, after spending the whole day in catching their food in the sea, repair at night to rest on the Islands near the coast, and their number being so great as entirely to cover the gronnd, they leave a proportionable quantity of excrement or dung. This is dried by the heat of the sun into a crust, and is daily increasing, so that notwithstanding great quantities are taken away, it is never exhausted. Some will have this guano to be only earth endowed with the quality of raising a ferment in the soil with which it is mixed. This opinion is founded on the prodigious quantities carried off from those Islands, and on the experiments made by digging or boring, by which the appearance at a certain depth, was the same as at the superficies; whence it is concluded, that the earth is naturally endowed with the heating quality of dung or guano. This would seem less probable, did not both its appearance and smell prove it to be the excrement in question. I was in these Islands when several barks came to load with it, when the insupportable smell left me no room to doubt of the nature of their cargo. This is the manure used in the fields sowed with maize, and with proper waterings is found greatly to fertilize the soil, a little of it being just close to every stem, and immediately watered. It is also of use in fields of other grain, except wheat and barley, and, consequently prodigious qnantities of it is yearly used in agriculture.

Extract from De Ulloa's Voyage to South America in 1735, *2nd Vol. page* 99.

INCREASED GROWTH OF COTTON.

What shall be done with the over production of cotton? This is a question that seems to perplex the planters and speculators throughout this country. Some have proposed to hold a convention of planters in the cotton-growing-States, for the purpose of agreeing on the average proportion of each county, district, or State, to be thrown out of that culture, and its place supplied with provisions.

Others have proposed to *destroy* all over a certain amount, so as to leave only enough for this years' consumption; others, more wisely, have proposed to hold back in store, one-third or one fourth of the present years' growth, and thus leave the *market* to the poor and needy, and only bring the rest forward when wanted; which is a thing often done. But it is to be hoped that none of the suicidical plans will be adopted. Do the planters think they can raise the price by adopting the practical cupidity of the *Spice Islanders?* Do they not know that cotton is produced in more countries than this? What advantage would it be then to leave the market open to the inferior kinds of other countries, while our own remained at home? How much better for us to force every market with our vessels, and the enterprize of our countrymen, and never cease until we compel, by its cheapness, every man, woman, and child in the world to wear garments made of the cotton of our land. This would be extending the bounties which Providence has given us to others, who have not the advantages which we enjoy, at the same time, build up for our country a fame far surpassing its present greatness.

We annex two pieces from Northern papers, in furtherance of our views. The following from the *New-York Sun* expresses one reason why "*over production*" is so cried down:

The Cotton Planters.

A notable scheme has been broached in this country within a few months, having for its object a material reduction of cotton. The planters have been solicited to look at the alledged fact, that in years of short crop they have obtained as much money as in years of over production so called, i. e. the increased price, in a year of short crop, makes the aggregate value of that years' product equal to what it would have been had the crop been a large one, in consequence of the low price of the article when the crop is large. But they have not been called upon to investigate the rapidly increasing production of cotton in British India, nor have they been asked to remember the anxiety of England to build up a great cotton growing country in Texas, which country the English say, must remain independent, under the protection [meaning the dictation] of the British Lion.

To ensure the success of the cotton culture in India, and to stimulate British schemes in Texas, it is desirable that our planters should cease to monopolize the cotton markets in the world. Nay, further, cotton must advance largely in price, so as to fill the pockets of the British planters in India, and by this means elevate them to that commanding position which shall enable them to overthrow the

cotton planters of the United States on the signal being given to that effect. Forgetting that foreign journalists here had been mainly instrumental in broaching this scheme, and being thrown off their guard by fulsome praise of the domestic institutions of the South from the same quarter—unused to this species of jesuitism—the southern newspaper press, to a moderate extent, has advocated decreased production. This invitation to southern planters to cut their own throats is now spreading throughout the cotton States. England found that she could not overthrow them by inciting servile insurrection among their servants, her abolition emissaries having been very generally imprisoned or summarily ejected from the slave States. The failure to establish a Great National Bank also destroyed all hope of the English Tories being able to prostrate our country by another commercial and monetary revulsion. As a last resort, therefore our great staple, which sustains nearly every other branch of industry, is secretly assailed. The London Times cries, "over production," foreign journalists in America cry, "over production," and at last our people very innocently and parrot-like re-echo the watch word. This cry being interpreted into plain language means—"Planters in America, cease producing so much cotton next year, that the staple may advance and enable the British planters of India to obtain higher prices for their largely increasing crops; and thus you Republicans will pave the way for your final overthrow, without giving us Englishmen the trouble and expense of hiring agents to steal your slaves or incite them to insurrection."

We sincerely believe that these are the ulterior objects of those who originated the project of decreasing the production of our great staple; and until our planters are able to establish cotton manufactories among themselves, (and thus become really independent,) we trust they will go on and produce as much cotton as they may find profitable or convenient, without regard to foreign instructions of any kind.

—

The following from the *New-York Farmer and Mechanic*, contains some truths which may be well applied by rational and thinking men.

Cotton—Southern Perplexities.

Our Southern friends seemed puzzled to know what to do with surplus cotton—restricting growers to a few acres of production in this crop is spoken of and rebutted. Our worthy brother M. W. Philips, of the South Western Farmer, steps forward and proposes that inducements be held out to farmers and planters to grow other articles for sale, to consume more cotton, and also to induce capitalists to start manufactories in the Southern limits, by offering a suitable bonus, from the Legislator as well as from funds accumulated by private contribution. We are pleased to find our Southern brethren

called upon to brush up their wits. Whenever they set fairly at work they will realize that "industry must prosper." But it is to be remembered that industry may be directed towards *tearing down*, as well as building up. Saying nothing about our previous opinion respecting the species of industry our Southern brethren have been most distinguished for, we are glad to say they appear now to be earnestly engaged in *building up*, and whenever they are able to protect their own household, whether by encouraging the growth of corn, oats or potatoes, madder, wood or indigo, or by producing silk, wool or Alpaca fibre, it matters not, so that they are prosperous. Yankee ingenuity will soon devise means to share their prosperity. We entertain favorable opinions of the suggestions of our brother M. W. P., excepting that of encouraging the consumption of cotton in the manner described, fearing that it would lead to a dreadful "consumption." The method proposed is "by encouraging the use of cotton mattresses and comforters, in their entire households," which our brother thinks would act as a "permanent drain" of cotton. We fear it would prove a permanent drain of life. Raw cotton (unspun) acts as a non-conducter of heat, holds between its fibres much confined air, would serve to check insensible perspiration, and consequently give rise to disease of the heart, lungs or liver. This matter has been too much overlooked by physicians and others, but if noticed with care it will be found that persons sleeping upon raw cotton mattresses, with raw cotton comforters, become dull, weak, frequently bloated, and require much medical attendance. Let one accustomed to sleep thus ask himself the question, do I not frequently rise in the morning with a cold, clammy sweat upon my body, the answer will return in the affirmative. Let him then try a straw or corn shuck bed, covered with a woollen blanket and cotton sheet in winter. With cotton sheet, woollen blankets, and a thin cotton chintz spread for covering, and if he does not rise in the morning a different man, it is our mistake not his. Raise wool, provide blankets for your household, and spare sets for the warm welcoming of a stranger on cold, damp nights. Raise silk, and if you wish a little corn, wheat, rye or oats, your Northern brethren have some to spare.

B.

SILK CULTURE.

TO THE FRIENDS OF THE CULTURE AND MANUFACTURE OF SILK IN NEW-YORK AND OTHER STATES.

Many of you have received copies of the "American Silk Grower's Magazine," published a few days previous to the late Annual Convention of Silk Grower's and Manufacturers, held in this city, under the patronage of the American Institute, to the Trustees of which we are indebted for much assistance, and which promises to become a most valuable auxiliary in the advancement of our work. We

have made arrangements with the editor of the "Farmer and Mechanic" as a repository of facts and arguments designed to advance the interests of this important enterprise.

A large number of letters have been sent us relating to a "market for cocoons." Owing to the discontinuance of the silk business at Auburn State Prison, many have their cocoons yet on hand, and manifest much discouragement in going any farther. A permanent market is what is now needed above every thing else connected with the cause, and without which it will never prosper.

With a view to obviate existing discouragements, and establishing a fixed market, we have been doing all in our power for several months; and it is with much satisfaction that we announce that our labors have not been in vain. A gentleman of this city has proffered the necessary assistance, and we have just arrived, with the expectation of having our machinery in operation in a few days: consequently, we are prepared to offer cash for all the cocoons in this State, at the highest price, which is from $2 50 to $3 50 per bushel, according to the value of the same, which is to be determined by the firmness of the cocoon, and the manner in which the chrysales have been stifled.

We trust that persons having cocoons for sale will lose no time in sending them on. The better way would probably be for several growers to get together, when they reside near each other, and put up their cocoons in boxes, containing twenty-five or thirty bushels each. These should be made of the lightest material. In order that cocoons sent may not fall short in measure, we mention the usual mode of measuring, viz: in measuring cocoons closely flossed, the measure should be slightly rounded; if unflossed, it should be heaped.

One thing we wish particularly observed by persons sending cocoons, and that is, that after measuring, you go before a Justice of the Peace and make affidavit that they were raised by you, giving the town and county, and when raised. This affidavit must be accompanied by a certificate of the County Clerk, that the Justice whose name is attached is a Justice of the Peace. We must be thus particular, in order to secure the bounty on the reeled silk.

Interested persons will extend this information as rapidly as possible; and in all cases let it be distinctly understood, that no fears need be entertained about a market, as this is opened on such a plan as to render it perpetual. We should be happy to see the quantity quadrupled next year. Branch filatures will be established if found necessary.

We wish it understood, also, that orders for manufactured silks, silk reels, machines for twisting, &c., will be promptly and reasonably supplied. We shall at all times have a supply of the best silk worms' eggs, in perfect preservation, and the best varieties of the mulberry trees for sale, which will be sent, subject to order, to any part of the United States.

We wish answers to the following questions to accompany the cocoons, viz: On what variety of the mulberry were the worms fed? In what month or months? In open or close buildings? And how the chrysales were killed, and the cocoons cured?

During the winter, boxes may be sent by the rail road, and should be directed to the care of Ransom Smith, 7½ Bowery, N. Y. The money for cocoons will be deposited here, and certificates sent, or the money, as may be preferred.

Communications relating to the silk question should be addressed, post paid, to

A. C. VAN EPPS, *East New-York, L. I.*

New-York, Nov. 30, 1844.

To which the Farmer and Mechanic, of the 16th of January adds:—"To growers at the South, we are at a loss what to say. That you possess facilities for raising the trees and rearing the worm far superior to those of the North all agree, and it is to be regretted that you have no filatures nor factories to offer you a market. From letters received from growers in Georgia and other parts of the South, it is fully shown that all that is wanting to induce very many to make this a permanent branch of business is, a good market. A proposition has been made and is now under consideration by a gentleman in Georgia, to open a branch filature ot Macon. Should this be done we may hope soon to witness a rapid advance in the cause in that section.

ARTIFICIAL MANURES.

The preparation and use of manures constitute one of the points in which the advance of modern agriculture is most apparent. For this advance, we are indebted to the application of chemical science to an investigation of the substances most commonly used to promote the growth of plants. An imitation of the operations of nature has thus been effected, in which there has been a decided improvement on the original, as the change necessary to convert organic matter into the fertilizing material is effected in a very short time; the bulk diminished while the efficiency is increased; and the disgusting, offensive character belonging to some of the original compounds entirely done away. Substances too, once wasted, or rather considered of no value, are now in the course of a few weeks converted into manures of the first quality. Every discovery of this kind is of importance to the agriculturist; for although some of them, it is probable, will not be made useful on a large scale, and some of the preparations cannot become common in this country; still there are many which we are confident will be extensively used everywhere; and the better they are known, the more highly appreciated by the farmer or gardener.

Poudrette, or prepared night soil, is one of the most valuable of these prepared manures, concentrating in a great degree the ele-

ments of fertility; and as prepared, being easily portable, used with facility, perfectly inoffensive, and very powerful in its action. The two most extensive manufactories of this article are the New-York Poudrette Company, D. K. Minor, Agent, New-York City; and the Lodi Poudrette Company, at Hackensack, New-Jersey, A. Dey, New-York City, Agent. We are pleased to learn that the demand for the products of these manufactories is constantly increasing, and the proofs of the value of the manure so made, rapidly accumulating. The value of poudrette, compared with good stable or barn yard manure, is estimated as one of the former to from 12 to 15 of the latter; and some have even estimated the difference as still greater. When we remember that this manufacture is designed to convert what has always been a nuisance and source of multiplied diseases in our cities, into a means of fertility and wealth, its importance will be duly estimated.

Another preparation, which is receiving some favor, is that produced by Bommer's patent, in which all ligneous or woody plants, such as straw, cornstalks, weeds, roots, sea-grass, and in fact all vegetable matters, are converted into manure in a much shorter period than by the usual course of decomposition. It is pronounced as efficient as stable manure, more lasting, and costing but little.—The process of preparing this manure has nothing difficult about it. It is probable the patent for a time, even were its value unquestioned, prevent the extensive use which this mode of preparing vegetable matter might otherwise have obtained. Of the peculiar forms of the process we know nothing; but the testimony in its favor from those who have tried it, appears ample. Patent manures, patent implements, and patent medicines, are very apt, however, by practical farmers, to be placed in the same category.

The English agricultural journals have within the past year frequently alluded to the qualities of a new fertilizing preparation called Daniel's Patent Manure. The specifications of the patent have been received in this country; and though evidently intended to mystify, rather than disclose the real process of making the manure, it is easy to see that a powerful manure must be the result of the combination. According to the specification, the materials of the manure are divided into three classes. First: ligneous matters, peat, straw, weeds, &c. Second: bituminous matters; such as mineral coal, (bituminous doubtless) asphaltum, pitch made from coal tar, or other pitch, mineral resin, and also tar. Third: animal matter; such as butcher's offal, graves, flesh of dead animals, also fish.

The ligneous matters are reduced to powder by grinding, or by the action of caustic lime. The bituminous matters are also ground into powder; if sticky like pitch, a small quantity of dry quick lime is added to prevent adhesion to the machine; if liquid, they are converted into vapor by dry distillation, in which vapor the ligneous materials are saturated; or if preferred, the soft bituminous matters are dissolved in water, to which caustic alkali has been added, and in this the ligneous matters are steeped. The animal matters are

mixed with the ligneous and bituminous ones, and then the whole reduced to a powder.

Such a preparation cannot fail to be a fertilizer of the most powerful kind, though it is evident the process needs much simplification before it can be adapted to the use of farmers generally.

Guano is probably the most powerful natural manure known; and the artificial one that shall most nearly resemble that, will doubtless be the most valuable. Voelckel's analysis, the latest and best of this substance, as given by Dr. Dana in his Muck Manual, shows that it contains in the various salts of ammonia 32 parts in 100, sulphates of potash and soda 9 parts, phosphate of lime 14 parts, soluble geine or humus 12 parts, and insoluble undetermined organic matter 20 parts. The artificial manures are valuable in proportion as they furnish the materials for the ammonia, phosphates, and sulphates, which abound in guano. It is likely, indeed certain, that the immense masses of guano existing on the islands of the Pacific, are in a very different chemical condition from what they were when first deposited by the sea fowl that frequent those coasts and islands; consequently in no fresh manures in any country, can we expect to find the same combination of fertilizing substances as in guano. In no other country could such masses have remained without the wasting or dissipation of their most valuable parts, or their entire substance; the nearly total absence of rain in the guano region, preventing such a result. The guano is, therefore, not only the result of the accumulation, but the chemical combination of ages, and what agriculture requires of science, is the discovery of the means of effecting in a short time what nature has been centuries performing.

In all preparations of artificial manures, two conditions are requisite; first, value as a fertilizer; and second, facility and simplicity of preparation. Without the first, the labor of manufacture is lost; without the second, few farmers will be able to avail themselves of the benefits such manures offer. Thus far, we are inclined to the belief, that of all the artificial manures, poudrette best fulfils these two conditions; but it by no means follows that other combinations may not be discovered, equally simple, and more powerful. Of one thing we may be assured; all such preparations, when brought within his reach and his means, will be hailed by the farmer with pleasure. [*Albany Cultivator.*

ACCUMULATION OF MANURES.

To the Editor of the Cultivator:

There are many seasons of the year, when the labor of collecting materials for compost, can be attended to with comparatively small expense, and when, generally speaking, there is with most farmers, but little else of importance to be done.

The supposition, still much too prevalent in many regions, that valuable compost cannot be made without the assistance of muck, marl, lime, &c, has been a stumbling block in the way of improvement with many farmers, which the best interests of agriculture require, should be speedily removed.

There are, around every farm-house, or at least, in its immediate vicinity, a variety of substances, all of which are equally as valuable, and no less useful or essential perhaps, in this important branch of agrestic industry, than those designated above. I have often been surprised, on visiting the premises and farm yards of some who have enjoyed an honorable reputation for economy in other matters, to find them overrun and encumbered with useless rubbish, and which a little time properly devoted, would have enabled the owner to have converted into a healthy and valuable adjuvant in the fertilization of a perhaps unfertile and unproductive soil. Bones, shells, chips, dung, and the refuse of the sink and laundry are all excellent ingredients in the compost heap, and will reward the person for the time and labor extended in gathering them up. It is often the case that soil in low places by the road side, which receive the wash from the highway, may be converted into a valuable stimulant, simply by throwing it into heaps. This labor however, if practicable, should be performed in the fall, as the wash during summer, adds greatly to its value as a stimulant, and the operation of the frost in winter greatly improves its powers, by thoroughly breaking up and disintergrating the earthy particles of which it is principally composed. Such soil, or indeed any other, which is moderately indued with the powers of absorbing and retaining moisture, and which is suitable to be amalgamated with a cultivated soil, may be greatly increased in value by being placed in a position where it will receive the wash from the sink.

Soap suds is probably one of the most powerfully fertilizing articles known. It contains the food of plants in a state of almost perfect solution, and consequently in a condition the most easy to be appropriated and assimulated, when applied as a stimulant to vegetable life.

In order to avail himself of this important source of wealth, the farmer should provide himself with a tank, of a size sufficient to contain, not only the suds made in the family, but a large quantity of other materials, such as turf, sods, bones, ashes, straw and muck ;— in short, any substance not actually and necessarily prejudicial to vegetation, and which may partly by imbibing the liquid, and partly by chemical action, become an ingredient in the food of plants.

The tank or cistern should be proportioned to the size of the family, and so situated as to admit of an easy approach with the cart. It should also be so constructed as to be exposed as little as possible either to the washing of heavy rains, or to the influence of the sun and air.

A Practical Farmer.

EXPERIMENTS WITH MANURES.

The following details of experiments made on the lands of Knock near Largs, in the spring and summer of 1841, by Mr. Wilson, were furnished to the Philosophical Society of Glasgow. A piece of three year old pasture of uniform quality, of about 200 falls, old Scotch measure, was divided into ten equal lots, which treated as follows, produced the undermentioned quantities of well made hay:

Lot,	Produce per lot, lbs.	Rate per acre, lbs.	Increase per acre, lbs.
1. Left untouched,	420	3360	——
2. 2½ bbls. Irish quick lime added,	602	4816	1456
3. 20 cwt. lime from gas works,	651	5208	1848
4. 4½ cwt. wood charcoal powder,	665	5320	1960
5. 2 bushels of bone dust,	693	5554	2184
6. 18 lbs. of nitrate of potash,	742	5936	2576
7. 20 lbs. of nitrate of soda,	784	6272	2912
8. 2½ bolls of soot,	819	6552	3192
9 28 lbs. of sulphate of ammonia,	874	6776	3416
10. 100 gallons of ammoniacal liquor from gas works, at 5 degrees of Tweddel's hydrometer,	945	7560	4200

The value of the applications was 5s for each lot, or at the rate of £2 per acre. All the articles were applied on the 15th of April, 1841, and the grass cut and made into hay in the following month of July.

APPEARANCE OF DWELLINGS.—WHITEWASH.

A correspondent of the Southern Planter says:—"There is, in the domestic habits and management of the people in the Northern and Southern States, nothing more striking than the difference in the appearance of the dwelling, out-houses, garden and other fences, especially all those about the homestead. In the North, all looks neat and fresh with their houses and yards, as if newly painted or whitewashed; their porticoes shaded and ornamented with the honeysuckle and multiflora, their little green plants before the door, fringed with beds of roses, pinks and hearts-ease. How different in the South!—in too many instances, houses dark and dingy—windows broken—palings broken down—gardens demolished, and lawns large enough for a New-England plantation, rooted up by hogs, or grown up in weeds. I repeat, that though this state of things is not so universal as to make it characteristic of the large plantations of the Middle and Southern States, south of the Delaware, it yet exists to an extent which reflects any thing but credit on their proprietors. Surely those whose establishments exhibit this slovenly exterior, do not reflect that the passer-by who sees it, is apt to suspect that interior management is in some correspondence

with external appearances. But I only meant, without a word of comment, to send you the accompanying receipt for making the best substitute for paint—let it go to your readers, that no excuse may be left for not having their houses wear that outward appearance of cleanliness and attention to looks, which betokens pure morals and a cultivated taste within :—

Brilliant Whitewash.—Many have heard of the brilliant stucco whitewash on the east of the President's house at Washington.—The following is the recipe for making it :—Take half a bushel of nice unslacked lime, slake it with boiling water, covering it during the process to keep in the steam. Strain the liquid through a fine sieve, add a peck of clean salt, previously dissolved in warm water; three pounds of ground rice, boiled to a thin paste, and stirred in boiling hot ; half a pound of powdered Spanish whiting, and a pound of clean glue, previously dissolved by first soaking it well and then hanging it over a slow fire, in a small kettle within a large one filled with water. Add five gallons of hot water to the whole mixture, stir it well, and let it stand covered a few days. It should be put on hot."

MODE OF APPLYING LIME—ROTATION OF CROPS.

We are under obligations to the Hon. John S. Skinner, for permission to publish the following extracts from two letters received by him from one of the most successful as well as distinguished farmers of Maryland. The subjects upon which the writer treats, are —1, *the application of lime* – and 2, *the proper rotation of crops*,—and as it will be perceived, he differs upon both points with Dr. Darlington, whose admirable papers our readers have doubtless read with pleasure. It does not become us to play the part of umpire between the two distinguished individuals, and will, therefore, content ourself with saying, that the writer of the extracts, which follow has done more with *lime*, in converting *worn-out fields* into *fields of fruitfulness*, than any other gentleman in Maryland, and that, by his skill in its use, he has set an example, in the county in which he resides, whose influence will be felt long after he shall have been gathered to his fathers.—*Ed. Am. Farmer.*

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" *January 8th*, 1844.

" In a late number of the American Farmer, there was a communication from you, enclosing a letter from Dr. Darlington. The rotation of crops recommended by Dr. D., I consider a wretched one. In the first place by his course, the advantages to be derived from a clover crop, are lost—Clover, to improve land, should be sowed alone, and remain on the ground two years, then to be ploughed under as manure for a crop of wheat. Timothy to be sowed with wheat, at the rate of a peck to a half bushel per acre;

the next year there will be a fine timothy field. He has three crops of grain in succession, which is contrary to every well established system of farming. Manure ought to be always applied fresh to the land in grass. If kept to be put on the wheat, more than one half of it is lost—and applying it immediately to the wheat crop has a tendency to make the wheat run to straw. In the application of lime, I think the proper system is to apply at once, what the land requires, say from one to two hundred bushels per acre, put in on the grass, and let the land remain three or four years in grass before it is ploughed. In this way I have never seen any injury from over liming; I have now placed on my land one hundred and sixty thousand bushels of unslacked stone lime—much of it has had two hundred bushels per acre; the greatest improvement has been made, where the heaviest liming has been attended with manure, or a clover crop turned under and the land rested."

"*January 15th*, 1845.

"Yours of the 10th is received—I omitted stating two other objections to Dr. D's system—Clover and Timothy together, in converting them into hay, one or the other must be sacrificed, owing to the difference in the time of their maturing. Clover ought to be cut the beginning of June, or when the blossoms begin to turn brown. Timothy is not fit to be mowed, till the seed is *fully ripe*, which, in this latitude, will be the last of July or commencement of August. I will detail to you the rotation I pursue with my arable land—a portion of my estate is in permanent pasture, owing to its remoteness, being broken, or bottom land, which is more profitable in pasture.

The first year corn; second year small grain, either wheat, rye or oats, which depends on the condition of the land. Third year clover, the first crop mowed, the second crop to remain on the ground without *being grazed*. Fourth year clover to be ploughed under for wheat; if he land be in high condition, the clover may be moderately grazed. Fifth year, wheat. Sixth year, Timothy mowed. Seventh year, Timothy mowed. Eighth year, in pasture. Ninth year in pasture.

In the above rotation, you will observe, that one third of the land is in grain, one third produces hay, and nearly one third is in pasture. The manure is always applied fresh to the land when in timothy. If the field be remote from the homestead, I find it more economical to manure it, when in pasture, by feeding cattle on it in the winter, with the hay it produces the second summer, and the corn fodder and hay from the adjacent fields.

If the land require lime, it is to be applied while in pasture. The second objection to Dr. D's course is, that it would be impossible on a farm of any size to haul out dung and apply it in time for a crop of wheat."

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We have also received the following communication upon the same subject, from an old and valued friend, who has devoted much attention thereto, both in practice as a farmer in one of the most

fertile counties of the State, as also in theory, as a leading member of the Committee on Agriculture, in the Legislature of Maryland:—

Mr. Editor,—The following is submitted in reply to the queries of your correspondent "*Virginia;*" if it shall in a single case only cause two blades of grass to grow where one only grew formerly, the writer will regard himself as amply compensated.

1. "What effect would be produced by the application of lime on the surface of limestone lands?"

Precisely the same as upon any other similarly constituted soil, where limestone do not exist—because analysis rarely shows more than a trace of lime in the soil of limestone lands; it cannot ascend from the rocks beneath, and where the rock rises above the surface its disintegration at most could only have a local effect, circumscribed by the extent to which the soil around it would be moved by cultivation. Reason and analysis both sustain this view of the subject. Exhalations alone, (if they had the power) could be the bearers of lime from the rocks beneath to the soil above; their agency in promoting vegetation, like many other "lowly things of earth," I apprehend have not been properly appreciated. This however, is foreign to the subject.

2. "By successive cropping, the lime, I understand, is extracted from the surface soil?"

Carbonate of lime, (common lime) is nearly an insoluble salt, it requires about 700 grains of pure water to dissolve one grain of lime, but it dissolves readily in water charged with *carbonic acid*, which it receives from every shower of rain, fall of snow, and the dews in small quantity, and a portion of it is thus rendered soluble which enters into vegetation, passes off in the excess of water, sinks into the earth, &c. The process of exhaustion however, is a slow one, 6 barrels of corn per acre without manure, was obtained this season, off of a field under my observation, which had been limed 60 bushels to the acre 19 years ago, and not improved beyond the influence of the lime since. Without the lime it would have been unproductive. All doubt about the permanency of the improvement will be banished from the country a few years hence.

3. "Would the application of it, in a powdered state, to the *surface* of such lands (limestone) be beneficial?"

By burning or calcination it loses its carbonic acid, which it receives again slowly from the atmosphere, rain, snow, &c.—being applied to land soon after burning in its caustic state, it acts powerfully upon the vegetable and other matters in the soil, being however in the gradual receipt of its proportion of carbonic acid again, it becomes restored to its original elements, and subsequently exerts a milder action in the soil; such as it would have exerted had it been applied in the "powdered state." To be equally effectual, however, in the "powdered state," it would have to be equally as fine, as when burned, unless a larger quantity was applied. Great care ought to be taken to spread it over the land in the finest possible

state of division, as upon that condition mainly depends its usefulness as an improver of soils.

4. "In what quantity?"

Forty bushels to the acre, repeat in 3 or 4 years, and be governed by circumstances afterwards. Experience will soon come to your aid.

D. W. N.

[*American Farmer.*

COB MEAL.

I noticed some time since, an article in your paper—editorial, I think—in which it was urged upon farmers to *grind their cobs*, as the meal was valuable for many purposes on the farm—particularly for poultry, hogs and stock.

On the strength of this suggestion, I "acted," and can now assure you, so well satisfied am I with the result, that my cobs will never, as heretofore, be "uselessly thrown away." As I grind my cobs with the corn, I cannot speak definitely as to the value of cob meal when used in its pure and unmixed state, but I am satisfied that there is a very important saving attained by economizing cobs in the manner you direct. I have, during the last three months fed corn and cob meal to my horses, cattle, hogs, and calves, and as I have a large stock this winter, and have thus far fed them wholly on the products of my farm, the saving to me, from this simple suggestion, has I assure you, been of no small value as regards the *purse.*

ECONOMIST.

[*Maine Cultivator.*

PROPER METHOD OF ERECTING THE CHIMNEY, FOR A SUGAR, OR STEAM MILL.

We copy the following in relation to the erection of Chimneys, from the 4th volume of the "Southern Agriculturist," No. 6, for June 1831, page 286; and which we would recommend to the attention of those interested, and who are about erecting similar ones.

"To obviate the risk of fire, the chimney is placed four feet from the building. The foundation, which should be prepared with great care, is 7 feet square; but by three sets-off is reduced to 6 feet, one foot above it. The walls are then carried up, two bricks thick, to the height of 15 feet; leaving a smoke fleu of 2 feet square, which size it retains throughout. At the height of 15 feet, the walls diminish in thickness to the top when they are only 9 inches. As the strength of the draught materially depends on the height of the chimney, it is advantageous to make it as high as may be conveniently done: 50 feet may be recommended. At the bottom of the chimney fleu, and in the side of the fleu N., between the chimney and the building, cleaning doors, 24 inches by 18, closed with loose bricks should be left. The latter admits of regulating the draught of the chimney, if it be found too great, by diminishing the aperture of the fleu with a few bricks."

CITY OF ST. LOUIS IN MISSOURI.

The trade of this rapidly growing city has accumulated within the last few years to an extent almost beyond credence. The Price Current of the 4th January 1835, (a neat and well-conducted sheet) furnishes a review of the preceding year's business, embracing statements of the imports and exports of all the leading staple articles. As evidence of the extent of trade, the following in reference to a few of the principal items, affords some idea of the immense resources of the Western and North-western States, and which as yet are but being developed.

IMPORTS.

10,738 hhds. Sugar,	at	$65 00	$597,970
42,476 sacks Coffee,	at	12 00	509,718
153,038 " Salt,	at	1 50	229,512
14,276 bbls. do.	at	2 00	28,552
12,068 " Molasses,	at	10 00	120,680
24,147 " Whiskey,	at	8 00	193,170
23,183 kegs Nails,	at	4 50	104,323
3,500 tons assorted Iron,	at	100 00	350,000
Total, - - - - - - -			$2,233,961

EXPORTS.

600,000 pigs Lead,	at	$2 10	1,260,000
6,275 tons Hemp,	at	70 00	437,250
9,500 hhds. Tobacco,	at	40 00	380,000
150,000 bbls. Flour,	at	3 75	972,500
250,000 bushels Wheat,	at	60	150,000
50,225 bbls. Pork,	at	8 00	401,800
35,000 " Lard,	at	14 00	350,000
36,410 kegs "	at	2 50	91,025
14,963 casks Bacon,	at	20 00	299,200
5,571 bbls. Beef,	at	4 00	22,284
100,000 Hides,	at	2 00	200,000
Furs and Peltries, estimated			700,000
Total, - - - - - -			$5,264,059

But eight brief years ago, and the population of St. Louis only reached 9,000—now it is the great depot of the commerce of five contiguous States and Territories, with a population of 35,000 souls, and probably augmenting its numbers more rapidly than any other city of the West.

MAMMOTH LEAD MINE.

This lead is situated in Jefferson county, in this State, about 10 miles from Hillsboro', the county seat, and about 55 miles south of the city. The proprietors have lately struck a cavern, which opens

about thirty feet wide, with mineral on all sides, the top and bottom layers or strata are horizontal, and vary from one to four feet thick, of pure *Galena*; the length and depth are not yet ascertained—one hundred feet in length is apparent from the entrance. This is probably as rich a vein as any yet discovered in this or any other country. [*St. Louis Rep.*

GARDEN *vs.* FIELD BEANS.

We can well remember when the field bean was universally used as a crop for harvesting dry, the garden bean being considered unsuitable for the purpose. The practice of late years has made serious inroads on this opinion; and where this has been long tried, it is a common observation, even with the uneducated consumers, that garden beans require much less pork to give equal body and flavor to them than is necessary with the field bean.

Science, comes in to verify and explain this opinion; as it has been found on analysis, that the kidney contains 23.6 per cent. of legumin, albumen, &c., while the field bean contains but 11.7 per cent., a difference in favor of the former of more than 100 per cent., which however, is lessened by greater proportions of some of the nutritious principles of the latter. The legumin, albumen, &c., is nearly analagous to the nutritious principles contained in meat, and hence the correct estimate placed upon the superior value of the kidney bean for edible purposes. It may be added that, on *strong soils*, the kidney bean is equally wholesome, and a much more prolific bearer than the field bean; which is all that is necessary to be known, to ensure for it a substitution in all cases for the latter, *by all such as read agricultural papers*, or who take the least interest in the study of the why and wherefore of the farmer's profession. [*Am. Ag.*

IMPROVED COTTON GIN.

The Mobile Register, has the following account of a new and improved cotton gin:

"Mr. Sherard, a planter of Sumter county, Alabama, has exhibited to us a working model of a new cotton gin, which promises to be of great value for the cotton interest. The improvement upon the ordinary gin cannot be well understood, without more minute specifications than we have the space to give, and even then, to be appreciated it ought to be seen in motion. In general we may, however, say that its principal new feature is that the grooves in which the saws run, revolve in such a way as to prevent the choking or wedging of the cotton in the teeth of the saw, and thus preserve the staple, which is separated from the seed with as little injury as though it were pulled off by the fingers. Besides this, there is a contrivance of revolving brushes, which clear out the dust and trash

by a double operation, cleaning the cotton more effectually than it has ever been cleaned by any other gin. In addition, we are informed by Gen. Desha of this city, a neighbor in Sumpter of the inventor, that he has seen one of those gins in operation, and that it not only executes its work much better and clearer, preserving the staple better than the ordinary gin, but it works more expediously. He timed the cleaning of 500 pounds—the gin being drawn by mules at an ordinary pace—and it was completed in 31 minutes. This rate could easily be accelerated, and no doubt is entertained that its capacity for a working day is from ten to to twelve thousand pounds. It is a subject which interests the planting community deeply, and we recommend it to their early and attentive examination.

GAS LIGHT.

At the Franklin Institute, Philadelphia, there is a new, beautiful mode of burning gas. It consists of a glass cylinder or chimney, which encircles the burners, but rises no higher than the base of the flame, and three metallic cylinders, one inside of the other above the flame. The flame forms a complete circle at its base, and is drawn upwards by the draught of air in the cylinders, in the shape of a frustrum of a cone, or cone cut off at the top. By means of this arrangement a very intense white light is produced, equal to about three hundred good candles, and capable of lighting a medium sized church without galleries. This single burner will enable a person to read fine print at the distance of one hundred feet, and throw a shadow around the nearest gas burners. In proportion to the amount of light thrown off, its consumption of gas is said to be more economical than any burner now in use. It was invented by Mr. Gurney, of Guide, in Cornwall, England. [*Louisville Farmer*,

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ROT IN POTATOES.

Joseph Watson of St. Andrews, New Brunswick, says in the Cultivator, that he rolls his cut potatoes in lime, and plants immediately —has not been troubled with the rot since.

AMERICAN PROVISIONS IN GREAT-BRITAIN.

In 1842, the imports of American beef, pork, lard, and cheese into Liverpool, amounted to—beef 3,367 barrels; pork 9,113 bbls. and 60 tierces; lard 2,125 bbls., and 39,174 kegs; cheese 1,841 casks, and 4,732 boxes. For the year ending the 31st of August last, the imports of these articles had increased as follows—beef, 9,812 bbls. and 10,789 tierces; pork 15,933 bbls. and 33 tierces; lard 25,585 bbls. and 30,425 kegs; cheese 6,504 casks, and 22,395 boxes.

ABSTRACT FOR THE YEAR 1844

Of the Thermometer, Barometer, Winds, and Weather, at Charleston, S. C.

MONTHS.	THERMOMETER. Maximum. 7 A. M.	2 P. M	9 P. M.	Minimum. 7 A. M.	2 P. M.	9 P. M	Mean Tem. 7 A. M.	2 P. M.	9 P. M.	Hottest Day.	Coldest Day.	BAROMETER. Max.	Min.	Range.	WINDS. N.	N.W.	N.E.	E.	S.E.	S.	S.W	W.	Prevailing.	Weather F.	C.	R.	Prevailing.	Quan'ty Rain.
JANUARY, - -	55	60	58	27	29	34	44.82	49 58	47 00	23	27	30.15	28.72	1.43	3	6	13	1	0	2	3	3	N. E	13	2	16	Rain	2.21
FEBRUARY, -	54	58	57	30	40	36	45.34	54.34	49 44	22	9	30.20	29.15	1.05	1	7	5	2	4	2	5	3	N.W	17	7	5	Fair.	2.33
MARCH, - -	60	66	62	44	52	46	53.48	59.77	55.74	13	5	30.25	29.07	1.18	3	5	2	1	6	8	3	3	s.	13	10	8	....	4 20
APRIL, - -	74	82	70	43	50	50	63 36	36 83	65 40	27	2	30 35	29.12	1.23	2	0	2	11	2	7	5	1	E	23	5	2	....	1.50
MAY, - - -	75	86	77	63	74	69	73.74	79.03	74.87	17	7	30.14	29.30	0.74	1	0	7	1	1	17	4	0	s.	21	5	5	....	2.14
JUNE, - -	80	87	82	68	74	73	75.93	81.16	77.33	29	12	29 90	29.50	0 40	0	0	7	3	9	5	6	0	s. E.	17	5	8	....	1.80
JULY, - - -	83	90	87	78	84	78	77 51	85 25	80 51	26	5	29.85	29.40	0.45	0	1	2	4	1	6	15	2	s. w.	20	2	9	....	0.45
AUGUST, - -	83	90	84	66	74	74	77.61	80 06	79.48	9	29	29 92	29.25	0.67	1	3	1	4	10	1	10	1	s. w.	23	0	8	....	7.38
SEPTEMBER, -	77	86	80	60	63	58	72 75	77.63	74.06	2	29	29 99	29.40	0.59	3	2	3	7	5	2	2	1	N. E.	17	2	11	....	4.95
OCTOBER,- -	72	80	72	49	54	53	62.96	72.38	62.09	18	30	30.05	29.04	1 01	4	7	6	3	5	2	3	1	N.W.	28	6	2	....	1.53
NOVEMBER, -	70	78	73	48	55	50	58.33	64.56	62.23	13	25	30.30	29.09	1.21	7	4	7	1	0	1	8	2	s. w.	21	3	6	....	5.40
DECEMBER, -	67	69	64	32	4 0	38	48.16	55.54	52 64	7	17	30.76	29.50	1.26	7	10	5	0	0	0	5	4	N.W	18	8	5	....	2.50

JOHN L. DAWSON, M. D., C. R. & Chair. Med. Com.

DISSOLUTION.

The undersigned have sold out their entire interest in the "Bommer Manure Method" to Mr. George Bommer, of N. Y; in consequence of which the partnership heretofore existing between us, was dissolved on the 6th ultimo by mutual consent.

Our agents are requested to make up their accounts to the 6th of November, and forward them to Tho. M. Abbett, Baltimore who is solely authorised to settle.

For any transactions after that date they will account to Mr. Bommer.

TH. M. ABBETT,
CHARLES BAER,
JOHN GOULIART.

Baltimore, Dec. 14, 1844.

N.B.—Charles Baer is the General Agent for Mr. Bommer in Georgia, and John Gouliart his General Agent for the State of Maryland.

BOMMER'S MANURE METHOD.

We have the satisfaction to announce to the Planters, Farmers and Gardeners of the vicinity of Charleston, that the Books with the Patent right, which Mr. Baer has caused to be sent on to the subscriber for disposal, have been received from Baltimore, and may be had of him on the terms before specified. Those who have bespoke them, will do well to call and obtain copies early. He also has received a report made to the Legislature of Maryland in favor of the method, which is daily gaining the public confidence whenever it is known. In the mean time we refer our readers to the last December and March Nos. of the Southern Agriculturist for some information on the subject.

A. E. MILLER,
No. 4, Broad-street.

PERUVIAN GUANO.

The subscriber has made arrangements with the Agent of the Peruvian Guano Company, by which he will be able to supply all orders for this most powerful of manures. The Peruvian is far superior to the African or Ichaboe Guano, as both analysis and experiments have proved. As this manure is believed to be not only the most powerful but at the same time the most economical known, our planters and farmers are invited to make trials with it the approaching season on their crops of cotton, corn potatoes, &c. &c. It has been extensively used in Great Britain and recently in the United States Pamphlets containing accounts of these experiments will be furnished to those *wishing to make trial of it*, by applying (post paid) to the subscriber.

All orders from *unknown* correspondents, must be accompanied with a city reference, and the Guano *paid for on delivery*.

JOHN D. LEGARE,
Dec. 1st, 1844. No. 81 & 83 East Bay.

RUFFIN'S CALCAREOUS MANURES $1.

ELEMENTS OF AGRICULTURAL CHEMISTRY,

In a course of Lectures for the Board of Agriculture, delivered between 1802 and 1812. By Sir H. Davy.

WESTOVER MANUSCRIPTS,

Containing the history of the Dividing Line between Virginia and North-Carolina. By Wm. Bird of Westover.

THE BANK REFORMER. By Edmund Ruffin.

THEORY AND PRACTICE OF DRAINING AND EMBANKING. By John Johnston, Esq.

For sale at A. E. MILLER'S, No. 4 Broad-st.

LIST OF PAYMENTS.

W. T. Williams, agent at Savannah, in full for	1844	Col. R. F. W. Alston, Geo'town,	1844, '45.
A. Milne,	1845	Wm. A. Alston, do.	1844, '45.
Stephen G Deveau, Pineville,	1845	Col. Jas. Chesnut, Camden,	1845
Maj. S. Porcher, do.	1845	W. H Mongin, Savannah,	1845
Jas. W Gibbs, Greenville C. H.	1845	J. Williman,	1845
O. S. Rees, Stateburg,	1344, '45	John Webb, Grahamville,	1845
John Wilson,	1845	Maj. Wm. M. Murry, Edisto,	1845
J. J Mikell,	1845	University of Alabama,	1845
Edward Turner, Natches,	1845	Dr. A. M Walker, Columbus,	1845
Jas. S Guignard, Columbia,	1843, '44.	Wm. G. Walker, Mulberry Grove,	1855
Thos. P. Alston, Georgetown,	1844, '45.	Maj. Charles Warley,	1845

TO OUR READERS AND CORRESPONDENTS.

Those Agricultural Friends who have promised to aid us with their communications, are respectfully reminded of the same; as it is the publisher's desire that at least the half of each Number shall be *original* matter. It is a cause of some regret, that it is not the case in the present Number; but he hopes the *selected* articles will be found of sufficient interest, to merit the approbation of his subscribers. He calls their particular attention to the address of R. W. Roper, Esq., before the State Agricultural Society, where they will find some excellent remarks on the state of our Agriculture: we shall conclude it in our next. The next article we recommend is on *the Factory System*, giving an account of a visit to Lowell; which is published to throw some light on the vast benefit the Northern States enjoy, in manufacturing our *raw cotton* for us, to their gain and our loss. There are some other articles on the "*Over-production of Cotton*," and the present agitation on that subject, which will attract the notice of our planters, and we hope will not be thought out of place in our Journal.

☞ We look to the South for support, and will be glad to give all the information in Agriculture, we can obtain, for her prosperity.

MILLER'S

Planters and Merchants' Almanac

For 1845,

☞ **For sale at the rate of $6 per Groce**